



Model for *Pinus sylvestris* Sistema Ibérico and Sistema Central (Spain)

Model

Psylvestris_sisc_v02

Model description

- Specie: *Pinus sylvestris* L.
- Spanish Forest Inventory (SFI) code: 21
- Geographical area: Sistema Ibérico and Sistema Central
- Geographical area (administrative): Ávila, Burgos, Segovia and Soria



Figure 1: *Pinus sylvestris*, by A. V. Veloso

Model type

- Category: growth
- Model level: distance independent individual tree model
- Reproduction methods: seedling forest
- Stand structure: even-aged stands
- Species composition: monospecific stands
- Forest origin: natural

Model requirements and recommended use

- Initial inventory requirements: age, dominant height and basal area of the plot; expan and dbh of the trees
- Geographical area: Sistema Ibérico Meridional, closer places and another places with similar characteristics (assuming differences)
- Stand type: monospecific stands, resinated or not
- Execution recommended time: 5 years executions (survival, growth and ingrowth equations developed by using that criteria)
- Site Index is defined as top height at a base age of 100 years



Figure 2: Details of *Pinus sylvestris*, public domain, <https://commons.wikimedia.org/w/index.php?curid=529150>



Figure 3: Provenance regions of *Pinus sylvestris* in Spain, by MAPA

Bibliography

Complete SiManFor model (recommended citation):

Lizarralde, I., Ordóñez, C., Bravo-Oviedo, A. Bravo, F. (2010). IBEROPS: Modelo de dinámica de rodales de *Pinus sylvestris* L. en el sistema ibérico meridional.

Model components:

- **Site Index equations:**

Rojo A, Montero, G (1996). El pino silvestre en la Sierra de Guadarrama MAPA
Bravo F, Montero G (2001). Site index estimation in Scots pine (*Pinus sylvestris* L.) using soil attributes. *Forestry* 74, 396-406

- **Survival equation:**

Bravo-Oviedo A, Sterba H, del Río M, Bravo F (2006). Competition-induced mortality for Mediterranean *Pinus pinaster* Ait. and *P. sylvestris* L. *Forest Ecology and Management*, 222(1-3), 88-98

- **Diameter growth equation:**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Height growth equation:**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Ingrowth equation and distribution:**

Bravo F, Pando V, Ordóñez C, Lizarralde I (2008). Modelling ingrowth in mediterranean pine forests: a case study from scots pine (*Pinus sylvestris* L.) and mediterranean maritime pine (*Pinus pinaster* Ait.) stands in Spain. *Forest Systems*, 17(3), 250-260

- **General calculations: bal, g, slenderness, normal circumference:**

Standard equations

- **Generalized height-diameter equation:**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Crown equations:**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Taper equations over and under bark (volume):**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris* L.) y pino negral (*Pinus pinaster* Ait.) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Biomass equations:**

Ruiz-Peinado R, del Rio M, Montero G (2011). New models for estimating the carbon sink capacity of Spanish softwood species. *Forest Systems*, 20(1), 176-188

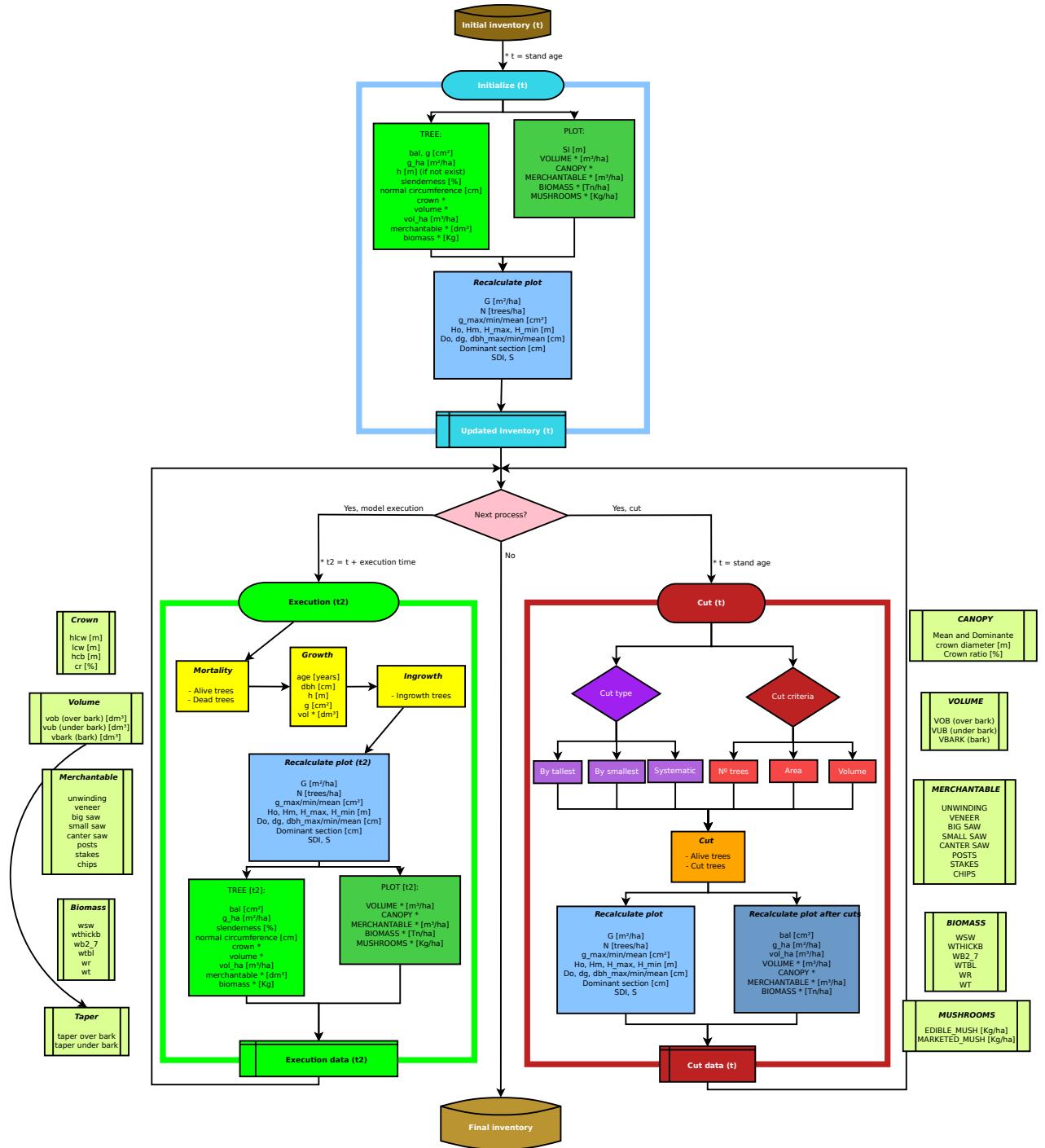
- **Technological wood uses information:**

Rodríguez F (2009). Cuantificación de productos forestales en la planificación forestal: Análisis de casos con cubiFOR. In Congresos Forestales

- **Value for Reineke Index equation:**

del Río M, Montero G, Bravo F (2001). Analysis of diameter-density relationships and self-thinning in non-thinned even-aged Scots pine stands. *Forest Ecology and Management*, 142(1-3), 79-87

- del Río M, López E, Montero G (2006). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait., *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León (No. 634.9560946 R585). Junta de Castilla y León, Castilla y León (España). Consejería de Medio Ambiente Ministerio de Educación y Ciencia, Madrid (España) Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Madrid (España)
- del Río M, Montero G (2011). Modelo de simulación de claras en masas de *Pinus sylvestris* L. Monografías INIA: Forestal n. 3



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Interest Links

SiManFor: Support system for simulating Sustainable Forest Management Alternatives (2020)
In: SiManFor. <http://www.simanfor.es/>. Accesed 15 May 2020

Sustainable Forest Management Research Institute UVa-INIA (iuFOR) (2020) In iuFOR. <http://sostenible.palencia.uva.es/>
Accesed 15 May 2020

Higher Technical School of Agricultural Engineering of Palencia. (2020) In: ETSIIAA Palencia. <http://etsiiaa.uva.es/>. Accesed 15 May 2020

University of Valladolid (UVa). (2020) In: UVa. <http://www.uva.es/export/sites/uva/>. Accesed 15 May 2020

